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EXAMINER	
PAUL, DISLER	
ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/786,494	OPITZ, MARTIN	
	Examiner	Art Unit	
	Disler Paul	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☒ Claim(s) 3 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claim 3 recites the limitation "the A/D converter". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1,5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuo (US 2002/0106092 A1) and Vatter (US 2002/0067835 A1).

Re claim 1, Matsuo disclose of the Array microphone with several individual microphones connected with a signal processor that comprises at least one digital filter for each individual microphone, in particular for voice recognition (fig. 11-12;/wt microphone to emphasize target source), characterized in that at least one loudspeaker is provided, which is arranged in the acquisition range of each of the individual microphones (fig.11-12 (36)); page 7[0101] line 8), that an electronic circuit is provided, which applies a signal to the loudspeaker in such a manner that it emits a noise signal (fig.11

(30-35)), and that the signal processor evaluates the response signals coming from each of the microphones and/or from each of the digital filters as a response to the reception of the noise signal (fig.12(4); page 7[0105,0107]).

However, Matsuo fail to disclose of the speaker signal emitting being a predetermined periodic signal. But, Vatter disclose of a system of having the speaker emitting a predetermined periodic signal (fig.1;3; page 4[0044]) for the purpose of enabling the device to perform automatic calibration of the sensor input microphones.

At the time of the invention it would have been obvious to a person of the ordinary skill in the art to add the speaker emitting a predetermined periodic signal in Matsuo for the purpose of enabling the device to perform automatic calibration of the sensor input microphones.

Re claim 5, Matsuo disclose of the Method for the automatic calibration of array microphones, comprising several individual microphones connected to a signal processor that comprises at least one digital filter for each individual microphone, whereby the signal processor increases the sound concentration of the array microphone and suppresses lateral sound sources by means of an appropriate algorithm applied to the individual microphone signals (fig.12, page 3[0031]), whereby filter coefficient sets used in the digital filters

and which are characteristic for the arrangement, type, sensitivity, and characteristics of the used individual microphones, the acoustical environment, and the location of the sound sources are components of the algorithm (fig.12 (4); page 4[[0107]), characterized in that at least one loudspeaker is provided in the acquisition range of each individual microphone, which loudspeaker is connected with a signal processor, to which each individual microphone is also connected, in that the signal processor emits via the loudspeaker, that the signal processor evaluates the response signals that subsequently come from each individual microphone and/or from each digital filter (fig.12(4), page 6[0086]) and compares them with model signals which are stored in the signal processor, or externally, and which correspond to properly operating individual microphones or properly operating digital filters, and that the signal processor (fig.12(4), page 6[0086]), as a function of the deviation of the response signals from the model signals (fig.12(4), page 6[0086]).

However, Matsuo fail to disclose of the speaker emitting a predetermined periodic signal. But, Vatter disclose of a system of having the speaker emitting a predetermined periodic signal (fig.1;3; page 4[0044]) for the purpose of enabling the device to perform automatic calibration of the sensor input microphones.

At the time of the invention it would have been obvious to a person of the ordinary skill in the art to add the speaker emitting a

predetermined periodic signal in Matsuo for the purpose of enabling the device to perform automatic calibration of the sensor input microphones.

The combined teaching of Matsuo and Vatter as a whole, would have incorporated the teaching of changing the value of individual filter coefficients or of all the filter coefficients of the filter coefficient set and repeats the test until the response signals are in the range of the model signals (fig.12, page 6[0086]).

4. Claim 2,6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuo (US 2002/0106092 A1) and Vatter (US 2002/0067835 A1) and in view of Official Notice.

Re claim 2, Matsuo disclose the method for checking array microphones, comprising several individual microphones connected with a signal processor, that comprises at least one digital filter for each individual microphone (fig. 1-3; 11-12), characterized in that at least one loudspeaker is provided in the acquisition range of each of the individual microphones and connected with a signal processor), to which each microphone is also connected (fig.11-12(36), and that the signal processor emits a noise signal via the loudspeaker (fig.11 (30)), that the signal processor evaluates the response signals that

subsequently come from each individual microphone and/or from each of the digital filters, and compares them with model signals stored in the signal processor or externally, and which correspond to properly operating individual microphones or properly operating filters(fig.12(4), page 6[0086])).

However, Matsuo fail to disclose of the speaker signal emitting being a predetermined periodic signal. But, Vatter disclose of a system of having the speaker emitting a predetermined periodic signal (fig.1;3; page 4[0044]) for the purpose of enabling the device to perform automatic calibration of the sensor input microphones.

At the time of the invention it would have been obvious to a person of the ordinary skill in the art to add the speaker emitting a predetermined periodic signal in Matsuo for the purpose of enabling the device to perform automatic calibration of the sensor input microphones.

But, the combined teaching of Matsuo and Vatter as a whole, fail to disclose of the display and having the signal processor provides a display in the form of a message from the model signals. However, official notice is taken the limitation of having a display to provide the status of the device in the form of a message is commonly known in the art, thus it would have been obvious for one of the ordinary skill in the art to have incorporate the having a display to provide the

status of the device in the form of a message for enabling the user to visually be informed of the operating condition of the device.

Re claim 6, which has been rejected by Matsuo and Vatter as a whole, and claim the same limitation as set forth in claim 2 has been analyzed and reject over such claim 2. (See claim 2 rejection above).

4. Claim 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuo (US 2002/0106092 A1) and Vatter (US 2002/0067835 A1) and further in view of Shuttleworth (2002/0071568 A1) and Flentje (US 2002/0048379 A1).

Re claim 3, the method according to claim 2, characterized in that the signal processor, carries out a verification of the loudspeaker (fig.4; [0044]/speaker may be calibrated) and of the system of having an A/D convertor ((fig.11 (32-1-n)) and the having the loudspeaker operating in parallel to the impedance of the A/D convertor (fig.111 (36,32)), However, the combined teaching of Matsuo and Vatter as a whole, fail to specifically disclose of the

verification is carried out before emitting a predetermined periodic noise signal via the loudspeaker, and where the loudspeaker signal is directly applied to the A/D converter and having the signal is recorded and evaluated by comparing this signal with a reference signal that originates from the measurement with a reference impedance instead of the loudspeaker impedance.

However, Shutttleworth disclose of a monitoring impedance speaker wherein the verification is carried out before emitting the noise signal via the loudspeaker, and where the loudspeaker signal is directly applied to the digital processor and further of having the signal is recorded and evaluated by comparing this signal with a reference signal that originates from the measurement with a reference impedance instead of the loudspeaker impedance (fig.1-2; page 1[0008-9; page 2[0017]) for the purpose of performing self-diagnostic test in ensuring the audio system is working properly. Thus, taking the combined teaching of Matsuo and Vatter and Shutttleworth as a whole, it would have been obvious for one of the ordinary skill in the art to add the verification is carried out before emitting the noise signal via the loudspeaker, and where the loudspeaker signal is directly applied to the digital processor and further of having the signal is recorded and evaluated by comparing this signal with a reference signal that originates from the measurement with a reference impedance instead of the loudspeaker impedance added to the combined teaching of

Matsuo and Vatter as a whole, for the purpose of performing self-diagnostic test in ensuring the audio system is working properly.

While, the combined teaching of Matsuo and Vatter and Shutttleworth as a whole, fail to explicitly disclose of the having the A/D converter wherein the speaker signal is directly applied to. However, Shuttleworth did disclose of having the loudspeaker signal directly directed to the digital amplifier (fig.1 (27,12)), thus with the above, it is inherent of the existence of such A/D converter being incorporated in the system which convert the signal so as to be processed by the digital processor (fig.1 (12)).

However, the combined teaching of Matsuo and Vatter and Shutttleworth as a whole, fail to disclose of the configuration of the system wherein the loudspeaker, together with the output resistance of the output amplifier which operates the loudspeaker, forms a voltage divider.

However, Flentje disclose a system wherein the similar concept of having the configuration of the system wherein the loudspeaker, together with the output resistance of the output amplifier which operates the loudspeaker, forms a voltage divider (fig.2 (20,24,18); page 3[0033]) for the purpose of enabling the device to consummate unnecessary electrical energy and thus maintaining the harmonic distortions and dynamic response of the signal at constant quality.

Thus, taking the now combined teaching of Matsuo and Vatter and Shutttleworth and Flentje as a whole, it would have been obvious for one of the ordinary skill in the art to have added the configuration of the system wherein the loudspeaker, together with the output resistance of the output amplifier which operates the loudspeaker, forms a voltage divider as in the modified version of the combined teaching of Matsuo and Vatter and Shutttleworth as a whole, for the purpose of enabling the device to consummate unnecessary electrical energy and thus maintaining the harmonic distortions and dynamic response of the signal at constant quality.

Re claim 4, the method according to claim 3, characterized in that the ratio of the loudspeaker impedance to the input impedance of the A/D converter is verified and, However, the combined teaching of Matsuo and Vatter and Shutttleworth and Flentje as a whole, fail to explicit disclose of the teaching wherein if it deviates too far from the value of 1, is adjusted by an additional pre-resistance, which is switched in front of the loudspeaker.

However, Flentje disclose a system of maintaining the input impedance within a speaker network wherein the adjustable resistor is provided in between the speaker (fig.2(26); page 3[0029]) for the purpose of achieving desired sound with a constant proportional

quality of high frequencies in the applied sound signals and constant tonal quality at any loudspeaker volume level. Thus, taking the combined teaching of Matsuo and Vatter and Shutttleworth and the additional teaching Flentje as a whole, it would have been obvious at the time of the inventions to have incorporated the maintaining the input impedance within a speaker network wherein the adjustable resistor is provided in between the speaker for the purpose of achieving desired sound with a constant proportional quality of high frequencies in the applied sound signals and constant tonal quality at any loudspeaker volume level.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art disclose of automatic testing of microphone and doing adjustment accordingly Feng et al. (US 2001/0031053 A1) and Belt et al. (US 7,035,415 B2) and Sasaki ("6,996,240 B1) and Beaucoup et al. (6,990,193 B2) and Finn et al. (US 6,535,609 B1).

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DP

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